CLAIMS

-	A temperature-controlled	actuator	COMPRISIDO.
	A temperature-controlleu	actuator	COMPANSING.
1.	A temperature comments		

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a housing (12) having a proximal end and a moveable distal portion;

a core-wire (16) extending along the housing, the core-wire having

a distal section (22) anchored to the distal portion of the housing, the distal section having

an austenite state, and

a martensite state,

the distal section being configured to move the distal portion of the housing by transitioning between the austenite state and the martensite state in response to a temperature change along a thermometric section (22, 24) of the core-wire, and

a proximal section (24) in mechanical communication with the distal section, the proximal section transmitting tension to the distal section;

a tensioning element (20) coupled to the proximal section of the core-wire, the tensioning element being configured to constantly apply a tensioning force to the core-wire.

- 2. The temperature controlled actuator of claim 1, wherein the distal section comprises a nickel-titanium alloy.
- 3. The temperature controlled actuator of claim 1, wherein the housing comprises a flexible tube.
- 4. The temperature controlled actuator of claim 1, wherein the housing comprises a tube having a flexible distal portion.

The temperature controlled actuator of claim 4, wherein the flexible distal portion is configured to assume a pre-determined shape when in an equilibrium state.

- 6. The temperature controlled actuator of claim 1, wherein the housing comprises a tube having a hinged distal portion.
- 7. The temperature controlled actuator of claim 1, wherein the housing is configured to define a path when in a compressed state.

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- 8. The temperature controlled actuator of claim 3, further comprising a rigid sleeve (14) enclosing a proximal portion of the flexible tube.
- 10 9. The temperature controlled actuator of claim 1, wherein an austenite transition temperature of the distal section exceeds an austenite transition temperature of the proximal section.
 - 10. The temperature controlled actuator of claim 1, wherein the thermometric section comprises the distal section of the core-wire.
- 15 11. The temperature controlled actuator of claim 10, further comprising an intermediate section between the proximal section and the distal section.
 - 12. The temperature controlled actuator of claim 11, wherein the intermediate section comprises an alloy having an austenite state and a martensite state, and the proximal section comprises an extension of the intermediate section, the extension having a smaller diameter than the intermediate section.
 - 13. The temperature controlled actuator of claim 12,
 - wherein the proximal section is in an austenite state when the distal section in a temperature-induced martensite state, and
 - wherein the diameter of the proximal section is selected such that the tensioning force causes the proximal section to be in a stress-induced martensite state when the distal section is in a temperature-induced austenite state.

14. The temperature controlled actuator of claim 1, wherein the thermometric section comprises the proximal section of the core-wire.

- 15. The temperature controlled actuator of claim 11, wherein the proximal section is configured to transition between an austenite state and a martensite state in response to a temperature change along the proximal section of the core-wire.
- 16. The temperature controlled actuator of claim 12, wherein the distal section comprises an extension of the intermediate section, the extension having a smaller diameter than the intermediate section.
- 17. The temperature controlled actuator of claim 16,

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- wherein the proximal section is in a temperature-induced martensite state when the distal section is in an austenite state, and
 - wherein the diameter of the distal section is selected such that the tensioning force causes the distal section to be in a stress-induced martensite state when the proximal section is in a temperature-induced austenite state.
- 18. The temperature controlled actuator of claim 11, wherein an austenite transition temperature of the proximal section exceeds an austenite transition temperature of the intermediate section.
 - 19. The temperature controlled actuator of claim 1, wherein the tensioning element is constantly biased to apply a constant force to the core-wire.
- 20 20. The temperature controlled actuator of claim 1, wherein the tensioning element is constantly biased to apply a variable force to the core-wire.
 - 21. The temperature controlled actuator of claim 1, wherein the tensioning element comprises a mass suspended from the core-wire.
- The temperature controlled actuator of claim 1, wherein the tensioning element comprises an axially moveable member engaging the core-wire, the axial position of the member controlling the tension in the core-wire.

23. A method for providing a mechanical response to a temperature change in a monitored environment, the method comprising:

anchoring a distal section of a core-wire to a distal portion of a housing, the distal section having an austenite state and a martensite state;

biasing the core-wire with a tensile force; and

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- exposing a thermometric portion of the core-wire to the monitored environment.
- The method of claim 23, wherein exposing a thermometric portion of the corewire comprises exposing the distal section of the core-wire to the monitored
 environment.
 - 25. The method of claim 23, further comprising causing a transition between an austenite state and a martensite state in the distal section in response to a temperature change along the distal section.
- The method of claim 23, wherein exposing a thermometric portion of the corewire comprises exposing a proximal section of the core-wire to the monitored
 environment.
 - 27. The method of claim 26, further comprising causing a transition between an austenite state and a martensite state in the proximal section in response to a temperature change along the proximal section.
- 20 28. The method of claim 26, further comprising causing a transition between an austenite state and a martensite state in the distal section in response to a transition between an austenite state and a martensite state in the proximal section.
- The method of claim 23, wherein biasing the core-wire comprises applying a constant force to the core-wire.
 - 30. The method of claim 23, wherein biasing the core-wire comprises applying a variable force to the core-wire.